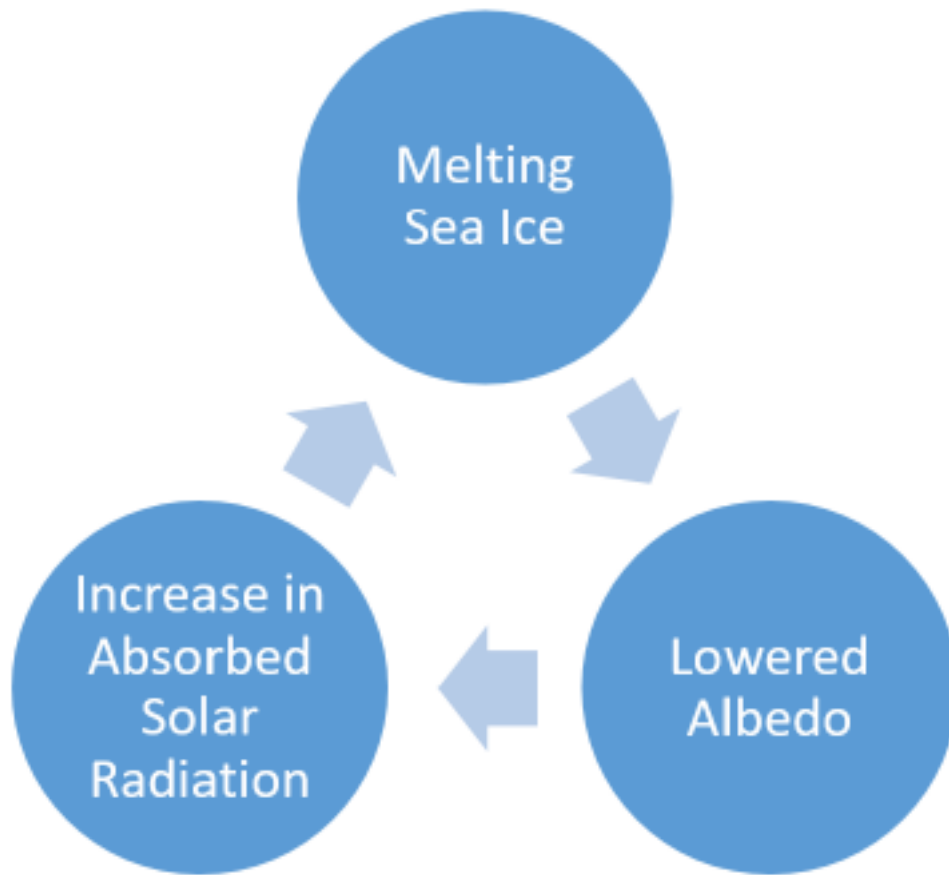


---

## My NASA Data - Mini Lesson

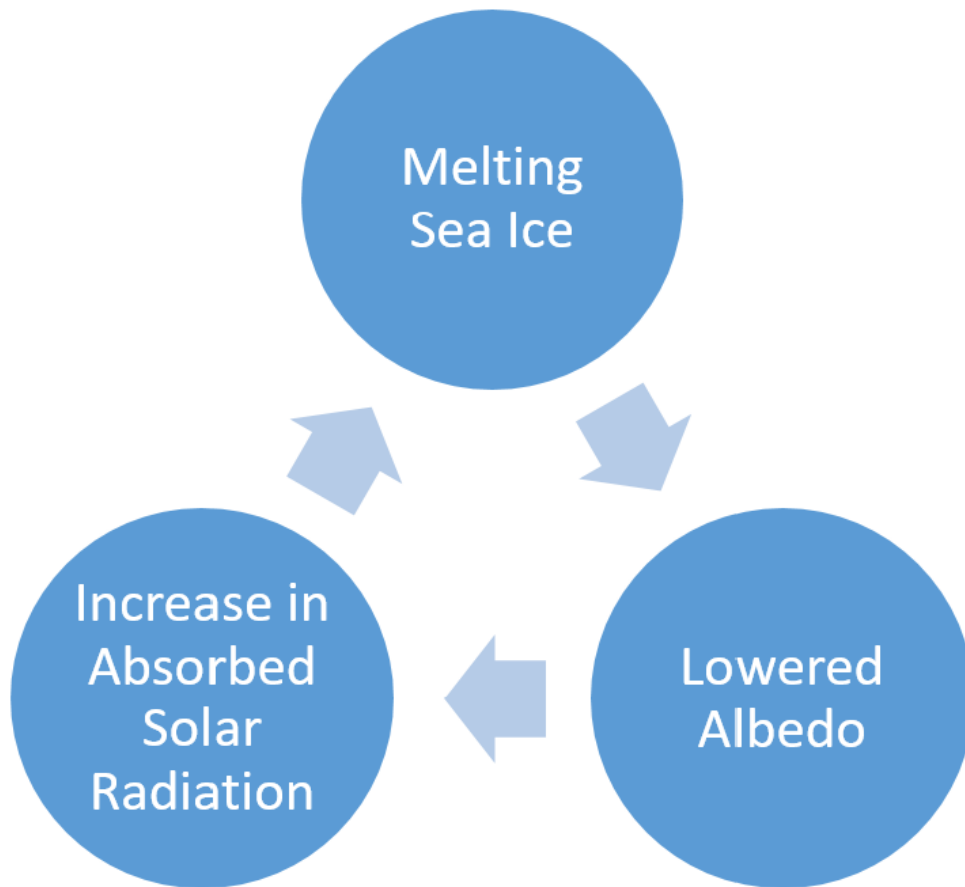
### Does Albedo Affect Arctic Populations?



### Mini Lesson

#### The Effect of Rising Temperatures

Warming trends are strongest in the Arctic region, where 2018 saw the continued loss of sea ice. This occurs because as the Arctic experiences warming, the resulting sea ice and snow loss significantly lowers the albedo of the Arctic. This results in increased absorption of solar radiation, leading to a cycle of more sea ice melt.



Watch the animation showing global temperature anomalies on Earth over time, then answer the following question.

Video: Global Temperature Anomalies from 1880 to 2018, *Credit: NASA's Scientific Visualization Studio*

1. Why is the Arctic more sensitive to warming than other regions on Earth?
2. Describe the diagram above. What is the relationship between melting sea ice, lowered albedo, and increasing solar radiation?

### **Animals Struggling From Sea Ice Loss**

1. Watch the video, [Shrinking Ice: Impacts \(Part 4\) from NOAA](#) about how animals like polar bears depend on sea ice for nearly all aspects of their life, including hunting, traveling and breeding.



[HOME](#) / [COLLECTIONS](#) / [ANIMALS OF THE ICE](#) / [SHRINKING ICE: IMPACTS \(PART 4\)](#)

## Shrinking Ice: Impacts (Part 4)

How does melting sea ice impact animals, their habitats, and sea level rise?



Shrinking Ice: Impacts (Part 4) - Credit NOAA

Nineteen separate polar bear subpopulations live throughout the Arctic, spending their springs roaming on sea ice and hunting. The bears have evolved mainly to eat seals, which provide necessary fats and nutrients in the harsh Arctic environment. Polar bears can't outswim their prey, so instead they perch on the ice as a platform and ambush seals at breathing holes or break through the ice to access their dens. For polar bears, sea ice is essentially life.

1. What role does sea ice play in polar bears' lives?
2. Think of another animal that may be affected by changes in sea ice. How would this animal be affected?

Video: Shrinking Ice: Impacts

*Credit: National Oceanic and Atmospheric Administration (NOAA), Ocean Today*

### Animals Benefiting From Sea Ice Loss

As the ice melts, it does not affect all wildlife equally. While some animals, like Polar Bears, may experience hardship due to the melt, other animals could experience benefits, like an increase in their habitat or food source. For example, sea ice melt exposes more ocean water to sunlight, spurring photosynthesis in phytoplankton. With less sea ice, comes more phytoplankton. Additionally, animals like the Bowhead whale, who eat phytoplankton, will find that their food source grows more plentiful as sea ice melts. Also, a lack of sea ice, exposes more Arctic waters for the Bowhead whale to swim around in. Recently, two Bowhead whale populations, from the Pacific and Atlantic, were able to meet each other for the first time. This is because the sea ice that had normally blocked the path to

each other had melted enough so that they could travel across the Arctic Ocean region above Canada.



Bowhead Whale

Populations Mingle - Image Credit: NASA Climate Kids

Image: For the first time, the melting sea ice in the Arctic is allowing the two populations of Bowhead Whales to mingle.

Students to answer the following questions:

1. How do changes in sea ice extent benefit some animals?
2. Can you think of another animal that may benefit from changes in sea ice extent? How would this animal benefit from the changes?

---

## Exit Tickets

Have students complete an exit ticket answering the following question:

- How is albedo linked to changes in habitats for polar bears and bowhead whales?

Teachers who are interested in receiving the answer key, please contact MND from your school email address at [larc-mynasadata@mail.nasa.gov](mailto:larc-mynasadata@mail.nasa.gov).

## Earth System Data Explorer

- [Changes in Snow and Ice Extent](#)